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Brief of Development Plan

BELTRAMI PROJECT

UNITED STATES DEPARTMENT OF AGRICULTURE
RESETTLEMENT ADMINISTRATION

By **W. T. COX**
Regional Forester-Biologist

FOR the past two years the Resettlement Administration has been conducting large-scale operations for the betterment of stranded farmers. This work has been carried forward along several different lines, one of which has a direct and immensely important bearing on conservation. Foresters and land economists for many years have recognized the tremendous waste and danger incident to sparse settlement in forest and other districts where there are poor soils. Too long it has been the custom to tolerate scattered settlement in areas where none should be permitted. A few families attempting to eke out an existence in an area of a million acres may, through their carelessness with fire and firearms, render the whole area unproductive. Such scattered families cost the counties more than the value of what they produce. Providing them with roads, schools and other services is inordinately expensive.

One of the finest things attempted by the Resettlement Administration has been the buying out of settlers and the development of such areas along the lines for which they are suited. Many large areas have been set up as Resettlement conservation projects.

UNDoubtedly one of the best, if not the most important of all such projects in the Lake States, is the Beltrami Project of about 800,000 acres lying north of Red Lake, Minnesota. With the removal of the scattered settlers from this area, it is difficult to overstate the possibilities this project has for the development of wildlife and forests. It is a wild area where an unusual variety of big game, upland game birds, waterfowl, and fur bearers have persisted. The forests consist mostly of swamp timber, second growth pine and large areas of young poplar

(aspen). There are extensive marshes and grass lands needing only slight improvement through construction of small dams to make them and the forests relatively safe from fire and exceedingly productive of wild life.

Already the project area is well stocked with deer, grouse of several species and some of the more valuable fur bearers. Large numbers of waterfowl nest here and the probabilities are that with completion of the marsh development this will become one of the finest wild duck and goose nesting areas in the country. Elk and moose are increasing and the very last of the native woodland caribou of the United States find a wilderness retreat in the muskeg swamps of this project. Beavers are here in fair numbers and will play an important part in the future economy of the area.

IT MAY be asked why the Resettlement Administration is purchasing and developing lands of this type since this is the function of the United States Forest Service or the Biological Survey. The answer to this question clearly indicates the importance of a program of the type carried on by the Resettlement Administration as differentiated from the type of program of other federal agencies interested solely in timber, wildlife or recreation. The primary objective of a submarginal land acquisition and conservation development project of the Resettlement Administration is to buy out the holdings of families stranded on land unsuited for agricultural production and move them to land more suited to this purpose. The future use of these lands is a secondary consideration in determining the location of a project. The primary consideration in establishing United State forest areas or Biological Survey Projects must of necessity be the proposed future use and not the present use. These latter agencies are expected to use funds available to the best advantage in obtaining forest areas or areas suited to wildlife. After a Resettlement Administration acquisition project has been established, it is the task of the Resettlement Administration conservationists to plan the future use of the land and the development required to improve the land for this use. As might be expected, a multiple use involving forest, wild life and recreation has been found to be the best use of these lands being purchased in the Lake States and many other states in the Union.

The development program as outlined hereafter will prepare this area for its best use with forest, wild life and recreation in balance.



Typical Settler's Shack. The Resettlement Administration is buying settlers out and giving them a new lease on life.

Dams. This has been an exceptionally dangerous district for forest fires ever since the Baudette-Spooner fire of 1910. The extensive drainage of open peat marshes and timbered swamps resulted in lowering the water table throughout immense areas in this part of the state.

Surrounding Beltrami Island and the adjacent deep peat areas underlain with sand, are tracts where shallow peat covers deep, rich deposits of silt and clay. The persistent burning of these light peat areas by settlers has resulted annually in the setting of hundreds of fires, many of which spread into the deep peat areas and swept across the high, dry pine lands. This district is practically at the edge of the prairie. Precipitation is not heavy; winds are high and fire very difficult to control.

It so happens that in general across the north, west and south sides of the project are extensive ditch systems, the ditches running north and south as well as east and west and usually being a mile apart. Manifestly the most effective and least expensive way to prevent and control forest and grass fires in this territory is to put dams in the ditches so as to flood wide belts of land or saturate them so that fires cannot run. Such belts need to be from a mile to several miles in width depending on the character of country both outside and inside the

conservation area. The width also needs to be greater on the west and south sides since from those directions come the strong, drying winds in the fire season.

IN THE years immediately following the World War, the State Forest Service started a program of damming the ditches, partly to saturate the peat lands but more specifically to provide ponds here and there in the dried out country where water would be available for use with power pumps in fighting fires. The start thus made was a small one considering the enormous area drained. The ponds formed, however, were promptly occupied by beavers and by them extended in a manner suggesting the exceedingly great value that a comprehensive system of dams might have in fire control. The flowage areas and marsh conditions resulting from such dams would be of incalculable value also in providing suitable habitat for big game and nesting and feeding grounds for wild fowl. It may be explained that beavers construct dams generally in late summer and early fall. At such times the ditches were usually dry and did not attract them away from the few running streams where they existed. A single dam and small flowage once established in a ditch would catch the spring run-off and hold it through the summer and thus permit the establishment of a colony of beavers which might add several dams above the original structure.

For the above reason, it was decided that by far the most important feature of development on the Beltrami Project should be the construction of upwards of 200 dams so placed as to accomplish the best results in fire control and wildlife protection and development. This work is largely completed.

Truck Trails. In a large area, such as the Beltrami Project, it is necessary for various purposes to have means of access to the interior and especially to points along the border of the area. Fires spreading from the settlements outside must be fought before they reach the lands of the project, stocked as they soon will be with valuable young timber and with game.

Truck trails are, therefore, laid out with a view to their utility in fire control and to a lesser degree for other administrative purposes. They should not be too numerous, should not parallel each other too closely, and should not be made wider or more expensive than absolutely necessary. Many portions of the project area will be all the safer if no roads reach them. Every mile of road over which the public can travel with cars means increased fire hazard. The type of truck

trail will vary with the character of the forest and kind of country through which the trail is built. Ordinarily on Jack or Norway pine lands the cleared strip, close cut, need not be more than fifty feet wide with the middle twelve feet grubbed and levelled but not necessarily graded or surfaced.

Fire Breaks. Fire break construction is one of the major phases of forest protection work. When they are properly constructed and maintained to take advantage of streams and other natural features and in conjunction with the dams and resulting marsh system, they reduce the number and especially the size of forest fires. In all cases, forest fire fighting is facilitated, because the firebreaks furnish points from which fighting can be started without loss of time in building fire lines.

Forest Planting. Reforestation is the basis for the restoration of the forest resources of the Beltrami Island Project, although efficient fire control will enable nature to reforest large areas where seed trees remain. Tree planting has as its goal the reforestation of denuded areas, the control of soil erosion, the protection of watersheds, and the provision of food and cover for wildlife.

Stand Improvement. In an unmanaged forest, Nature oftentimes appears wasteful of space and of plants. Many blanks occur in timber stands and many extensive thickets of potentially valuable trees. By the judicious thinnings, release cuttings and similar operations being made, timber production will be greatly increased both in quantity and quality.

ON THE Beltrami Project, Nature in many places almost overdoes herself in reforestation efforts. Thickets of pine occur where from 100,000 to 400,000 little trees per acre are attempting to grow. Aspen thickets are almost as dense. Manifestly stands of this kind tend to choke themselves and growth is retarded. Fortunately, the forester has an ally in the snowshoe rabbit which during periods of abundance—about every ten years—performs a very creditable job in thinning these thickets. For many years I have observed that the rabbits, where they nip off or girdle a thicket of small trees, invariably leave a sufficient number of the trees alive to form a full stand of timber later on.

Timber Estimates and Harvestings Timber estimates are being made to determine the stand of timber. Growth studies also are under way for determining the profitability of forestry, for aiding the regulation of the future cut, for definitely fixing the rotation, for the construction of normal yield tables,

and for silviculture research. Timber estimates are very essential in the construction of forest management plans. The normal yield tables, which are made from data collected from timber estimates, are indispensable in timber stand improvement.

Biological Reconnaissance. On an area such as the Beltrami Project, as large as two average counties, it is important in shaping developmental work that we know first of all what is on the tract. Naturally a timber survey and a cover map are essential. It is necessary also that dependable information be obtained concerning the species of game and other wildlife existing on the area and the approximate numbers of each.

BIOLOGICAL Reconnaissance must go beyond the determination of wild life species and their numbers. It must concern itself with environmental data, with ecology, with trends in wild life populations and other matters having a bearing on development of wild life and its future management and administration.

The Beltrami Island Project contains a number of important game and wildlife species. Although the management intensity proposed is not of high degree for the most part, the sheer immensity of the area and the seasonal difficulty of travel makes considerable man power essential to do the Biological Reconnaissance job.

Under immediate consideration come such operations as location of areas which may be advantageously flooded for waterfowl and fur bearers followed by a detailed survey of present soil, cover, and game conditions on the specific flowage sites and finally location of aquatic plantings. Adequacy of nesting cover for waterfowl on land surrounding potential and actual flowages is a matter receiving careful consideration.

THE range of upland game and big game species must be tentatively determined and their habitat analyzed for deficiencies in seasonal food and cover. We are giving much attention to the establishment of White Spruce and White Pine plantings suitable for deer and moose cover in areas where little suitable cover exists but where there is an abundance of good browse. In this way we hope to break up the heavy concentrations or "yardings" where winter food shortages occur.

Aquatic Planting. Natural lake shores and undrained marshes usually have an abundance of aquatic vegetation, some of which furnishes food for wildlife. Drained lakes and marshes and, of course, other lands that have never been submerged,

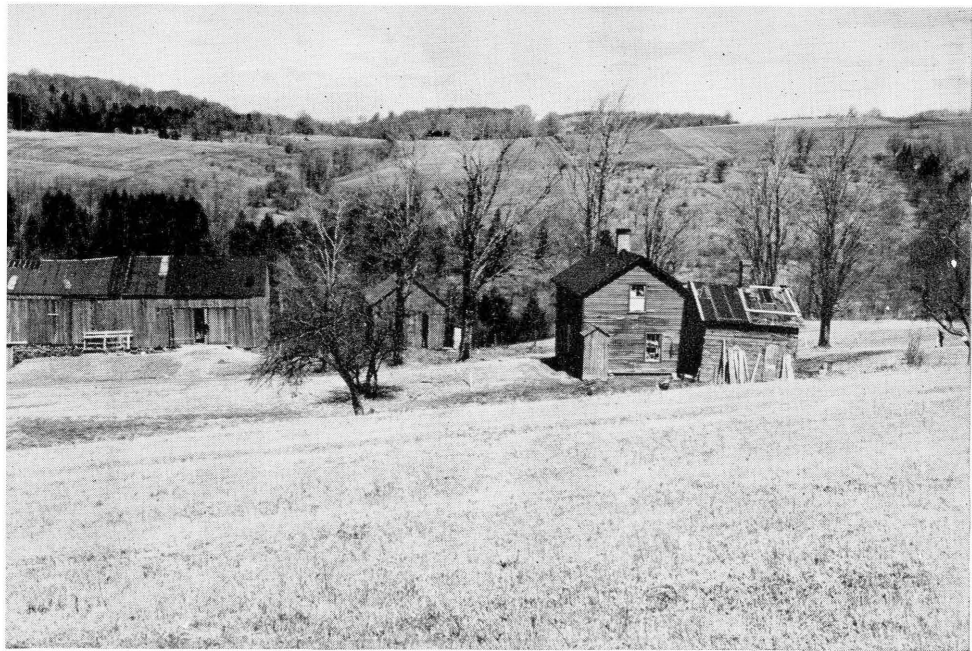


Stabilization of Stream Flow is another purpose of Public Forest Expansion. Stream in the Watershed of the Cherokee National Forest.

when artificially inundated may not naturally become stocked with aquatic plants for many years. These areas therefore need to be planted to aquatics. Frequently, they need plowing or breaking up of the old sod, brush or moss covering before desirable species of water plants can be established.

It is desirable to plant aquatics in considerable quantity wherever dams are being constructed and flowage areas created in the course of our development work on the project. Since to plant large, continuous areas would be very expensive, and since the tendency of water plants once established is to spread, the best practice is to plant in clumps and strips aggregating not more, and usually much less, than ten percent of the area of the pond or marsh and then depend on nature to extend the planted species.

Food and Cover. It is the objective of the development program of the Beltrami Project to build a game range that will be as nearly self-sustaining as possible. To this end, plantings of fruit and berry bearing shrubs and trees must be made to supply fall and winter food. Certain game species require winter browse plants and where absent, these must be introduced. For upland game birds which have been partly dependent upon



Submarginal Farm typical of many areas being acquired by the Resettlement Administration. This one to be developed for purposes of Wild Life Conservation.

farmers' grain fields in the project area, a permanent system of food patches is being installed.

Clearing and Posting Refuges. The clearing and posting of the Red Lake Wildlife Refuge as part of the development program of the Beltrami Project is justified in that the purpose of the refuge is to provide areas closed to hunting, and to trapping except under permit, in order that the surplus population may flow out and restock the surrounding territory. Such a refuge is necessary until such time as the breeding stocks have been built up to a high level and hunting and trapping can be controlled on an annual increment basis. Experience has shown that the boundaries of refuge areas must be clearly and unmistakably marked if trespass is to be avoided or actions on violations for trespass successfully prosecuted.

Stream Improvement. The stream improvement work contemplates the creation of better conditions for trout, bass and other game fishes. Through the use of deflectors, log roll dams, floats, rock fills, bank planting and other devices, a stream can be made much more habitable for fish. Deep holes, gravel spawning beds, shallow riffle feeding grounds, suitable plant and animal food in quantity, shade from direct sunlight, screens from natural enemies, bank binding to prevent erosion and manipulation to keep the water cool and uniform as to flow are some of the aims in stream development.

Care is being taken not to overdo stream improvement. If structures are placed too close together the stream takes on an artificial appearance and its attractiveness is lessened. If the structures are so placed as to make angling too easy, the result is detrimental rather than helpful. Trout streams should remain difficult to fish, otherwise, the fish will be taken out too quickly and completely. Trout fishing, after all, should be in effect a combination of "fishing and hunting" so that the angler must walk a considerable distance to fish a mile of stream. He should be compelled to look carefully for likely places into which to drop a fly and, in the smaller streams, if fish are to persist, portions—perhaps one-third of the stream—must be so overhung with trees and bushes as to make it in effect a natural trout "sanctuary."

Telephone Lines. In addition to the old telephone lines that have been built across some portions of the Beltrami area by the State Forest Service, a number of new lines are being constructed by Resettlement to provide better means of fire suppression and wildlife protection.

Topographic Surveys. In connection with the dam construction program it has been found necessary to run a great many lines of levels up the hundreds of miles of ditches. These levels are to determine the gradient of the ditches so that dams may be intelligently located the right distance apart and of the right height with a view to maintaining continuous wet conditions and safety from fire along the ditches where this kind of development is deemed advisable. In connection with building sites such as ranger stations, camps, etc., detailed topographic surveys for small areas have been made.

Buildings. There is a considerable variety of buildings in process of being constructed. These consist of camps for construction crews; a ranger station with house, office, garage and warehouse; and a number of small contact stations or patrol cabins.

Fire Fighting. With regard to protecting the project area from danger by fire, the Resettlement personnel has independently and through cooperation with the state fire fighting organization done everything it could to prevent loss. Forest and grass fires are a menace not only to the natural resources of the area—timber, wildlife, scenery—but also to the structures and other improvements being placed on the area.

Public Camp and Picnic Grounds. While the Beltrami Project is not heavily used by tourists and campers, there are nevertheless certain attractive localities in the area which the public

has been in the habit of visiting more or less and where much more camping and picnicking would be done if facilities were provided. Two separate public camp and picnic grounds are being established. These will cover a total of about 20 acres and on them considerable work is being done to make them reasonably secure from fires getting onto the areas themselves and from the danger of fires escaping from these areas.

Foot Trails. There was found to be need for connecting some of the new truck trails and old foot trails. Many miles of simple trails are therefore being built. These simple trails call for six feet of clearing, close cut but not grubbed. They are put in shape not only for ordinary foot travel but for use of dog teams in the winter. Dog teams are commonly used here for winter patrol by rangers and wardens.

Watering Places, Moose Wallows. Big game species in the project area, particularly in that part of it comprising Red Lake Wildlife Refuge, ever since the ditches were dug have acquired and followed the habit of going to the Indian Reservation and Red Lake for water. On the Reservation these animals may be killed at any time and they are very easily killed while congregated at the watering places. The dams now built and being built by the Resettlement Administration in the country north of Red Lake will provide ample water so that the moose, caribou, etc., will not need to make the dangerous trip to the Reservation and Lake.

Since the last remaining Woodland Caribou native to the United States are in this area and number only four animals, the writer has been making an effort to obtain a few additional caribou from Canada to replenish the little band. After much difficulty the prospects now appear favorable for getting them. With moose, elk, caribou, mule deer and Whitetail deer as well as black bear, the Beltrami is unique in having a greater variety of big game and better conditions for big game than any other district east of the Rocky Mountains. With the completion of the dam system now more than half done, the enormous marsh areas being developed here will put this project far in the lead also as a nesting place for wild ducks and geese and as a breeding place for beavers and muskrats. The settlers have been taken care of and through a reasonable expenditure for development the Beltrami Project is rapidly becoming a truly marvelous wildlife and forestry area.